

### REMARKS

This Amendment is filed in response to the second Office Action dated December 28, 2005, which has a shortened statutory period set to expire March 28, 2006.

#### Chatterjee Teaches A Different Art

Chatterjee teaches a method for diagnosing process parameter variation from measurements in physical analog circuits. Abstract. In case this diagnosing is not met by standard test signals, Chatterjee teaches a method for automatically generating optimized tests that enable the computation of device parameters. Abstract. Once a cause of parametric yield loss is diagnosed in terms of device parameters variations, that information can be used by process engineers to tune the manufacturing process to improve yield. Abstract.

In contrast, Applicants' invention relates to interactively optimizing an engineering design. Therefore, Applicants respectfully submit that the teachings of Chatterjee would not apply to design optimization.

#### Claims 1-6 and 9-13 Are Patentable Over Chatterjee

Moreover, even assuming arguendo, that the teaching of Chatterjee do apply to design optimization, Chatterjee still fails to disclose or suggest the recited sensitivity analysis.

Claim 1 recites in part:

conducting a sensitivity analysis on the engineering design to determine a set of performance factors, wherein each performance factor defines an effect, on a set of metrics for the engineering design, of variations in a selected design variable over a range of values, while holding the set of design variables, except for the selected design variable, at the baseline set of design values.

Conducting a sensitivity analysis while holding the set of design variables, except for the selected design variable, at the baseline set of design values beneficially:

allows the designer to gain insight into the problem domain by enabling the designer to visualize the metric dependencies on any design variable ... [and] allows the designer to visualize the tradeoffs of multiple metrics through a design variable and allows the identification of the design variables which are important in the modification of a specified metric.

Specification, paragraph [0023].

The Office Action states that "conducting a sensitivity analysis" as recited by Claim 1 is taught by Chatterjee "especially [at] col. 9, lines 55-65 showing that ... only one value is computed for each parameter (design value) at a time, by keeping others constant." Applicants respectfully traverse this characterization. Specifically, Chatterjee, at col. 9, lines 54-63, teaches:

When ambiguity groups exist, the matrix inverse  $(J(p_i))^{-1}$  required in Equation 13 cannot be directly computed. Therefore, one device parameter from each ambiguity group, is kept a constant and the corresponding column is removed from  $J(p_i)$  so that the matrix inverse required for Equation 13 can be computed. Since one parameter from each ambiguity group is kept a constant during each iteration, only one of the infinitely many possible solutions for each of the device parameter values is computed, in case ambiguity groups exist.

Even assuming arguendo, that the "device parameter" and "ambiguity group" taught by Chatterjee correspond to the "design variable" and "set of design variables" recited by Claim 1, Chatterjee still does not teach "conducting a sensitivity analysis ... while holding the set of design variables, except for the selected design variable, at the baseline set of design values" as recited by Claim 1.

That is, Chatterjee actually teaches the opposite case, wherein only one parameter from each ambiguity group is kept a constant during each iteration. Applicants also note that Chatterjee teaches nothing about a baseline set of design values during this sensitivity analysis. (These diametrically opposed techniques perhaps can be explained by the conceptual underpinnings of each. Specifically, Chatterjee treats parameters as linearly dependent columns of a Jacobian matrix. Col. 9, lines 47-54. In contrast, Applicants' advantageously treat parameters as not being coupled at all, which turns out to be effective for design. Specification, paragraph [0027].) Because Chatterjee fails to disclose or suggest various aspects of the recited sensitivity analysis, Applicants request reconsideration and withdrawal of the rejection of Claim 1.

Claims 2-6 depend from Claim 1, and are therefore patentable for at least the same reasons presented for Claim 1. Based on those reasons, Applicants also request reconsideration and withdrawal of the rejection of Claims 2-6.

Claim 9 recites in part:

computing means for performing a sensitivity analysis on the engineering design to determine a set of performance factors, wherein each performance factor defines an effect, on metrics for the engineering design, of variations in a selected design variable over a range of values, while holding the set of design variables, except for the selected design variable, at the baseline set of design values.

Thus, Claim 9 is patentable for substantially the same reasons provided for Claim 1. Based on those reasons, Applicants request reconsideration and withdrawal of the rejection of Claim 9.

Claim 10 depends from Claim 9, and is therefore patentable for at least the reasons provided for Claim 9. Based on those

reasons, Applicants also request reconsideration and withdrawal of the rejection of Claim 10.

Claim 11 recites in part:

instructions for causing the computing system to perform a sensitivity analysis on the engineering design to determine a set of performance factors, wherein each performance factor defines an effect, on a set of metrics for the engineering design, of variations in a selected design variable over a range of values, while holding the set of design variables, except for the selected design variable, at the baseline set of design values.

Thus, Claim 11 is patentable for substantially the same reasons provided for Claim 1. Based on those reasons, Applicants request reconsideration and withdrawal of the rejection of Claim 11.

Claim 12-13 depends from Claim 11, and is therefore patentable for at least the reasons provided for Claim 11. Based on those reasons, Applicants also request reconsideration and withdrawal of the rejection of Claims 12-13.

CONCLUSION

Claims 1-6 and 9-13 are pending in the present application.  
Allowance of these claims is respectfully requested.

If there are any questions, please telephone the  
undersigned at (408) 451-5907 to expedite prosecution of this  
case.

Respectfully submitted,

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